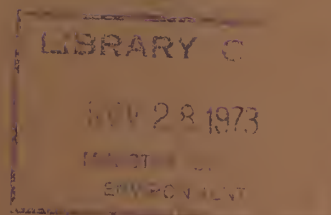


ONTARIO MINISTRY OF ENVIRONMENT  
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## OPERATING SUMMARY

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1972  
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# AMPBELLFORD



LABORATORY & RESEARCH  
MINISTRY OF THE ENVIRONMENT

# 1972



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OPERATIONS ENGINEER

J. Dick

135 St. Clair Avenue West

Toronto 195

CAMPBELLFORD

WATER POLLUTION CONTROL PLANT

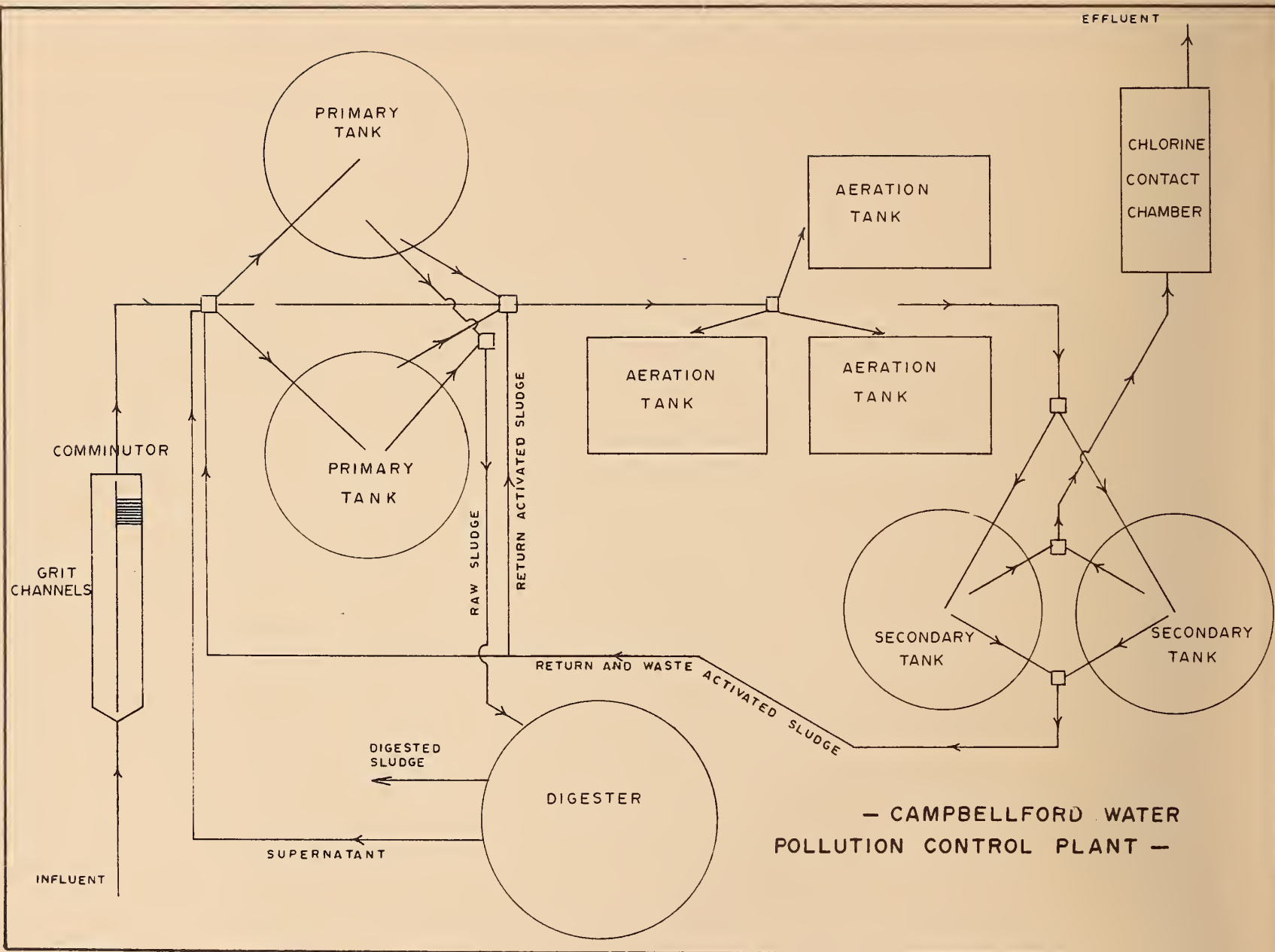
MINISTRY OF THE ENVIRONMENT

1972 ANNUAL OPERATING SUMMARY



## CONTENTS

Title Page	. . . . .	1
Flow Diagram	. . . . .	4
Design Data	. . . . .	5
'71 Review	. . . . .	6
Process Data	. . . . .	8



# DESIGN DATA

PROJECT NO. 1-0028-66  
DESIGN FLOW 1.0 MIGD  
BOD - Raw Sewage 200 mg/l  
TREATMENT Activated Sludge  
DESIGN POPULATION 4200

## PRIMARY TREATMENT

### Grit Removal

Type: Channels, manually cleaned  
Size: Two 36'6"x2'8"x3'9"  
Flow Velocity: 1 fps

### Screening

Type: Manually cleaned

### Comminution

Type: Worthington model 15C-5

### Primary Sedimentation

Type: Dorr-Oliver-Long S-7  
Size: Two 40'dia x 7' swd  
Retention: 2.4 hours  
Loading: Surface 400 gal/ft<sup>2</sup>/day  
Weir 4000 gal/ft/day

### Outfall

- to the Trent River

## SECONDARY TREATMENT

### Aeration Tanks

Type: Mechanical  
Size: Three, each 55,000 gallons  
Retention: 4 hours  
Air Supply: Simon Carves, one aerator per tank

### Secondary Sedimentation

Type: Dorr-Oliver-Long S-7  
Size: Two 45' dia x 9' swd  
Retention: 4.8 hours  
Loading: Surface 330 gal/ft<sup>2</sup>/day  
Weir 3540 gal/ft/day

## CHLORINATION

Type: Wallace & Tiernan V800  
Size: One 400

### Chlorine Contact Chamber

Retention: 30 minutes

## DIGESTION SYSTEM

Type: Single stage  
Size: 30' dia x 25' swd

## PUMPING STATION

### P. S. #1

Three Crane Deming each 800 US gpm @ 38' tdh

### P. S. #2

Two Flygt CP3100 each 400 US gpm @ 24' tdh

# '72 Review

## GENERAL

The Town of Campbellford water pollution control plant treated a total of 589 million gallons in 1972. This was an average daily flow of 1.6 million gallons per day. The hydraulic design of the plant is 1 million gallons per day so it can be readily seen that the plant was overloaded hydraulically most of the time. A further analysis of the plant performance table will show that there is very little difference in flows to the plant during the various months of the year. This is not a normal condition. At most municipalities there is a considerable difference between the summer and winter flows. This is primarily due to the large infiltration problem in Campbellford.

The construction of a 12-inch diameter polyethylene pipe to carry ground water under the Trent Canal and thus eliminate this flow from getting into the sewage collection system was completed in 1972.

During the year, all of the outside metal railings and metal structures including the digester dome were painted.

A preventive maintenance program was initiated during 1972. All equipment items are recorded on a card system and the maintenance of each piece of equipment is distributed throughout the year. With the aid of a frequency control board, the various equipment items come up during various times of the year and the necessary inspection and repairs are conducted on the equipment. With a good preventive maintenance program in effect, the break down of equipment should be at a minimum.



There were times in 1972 when the industrial waste discharges exceeded the capacity of the plant. The result was that the dissolved oxygen disappeared from the aeration tanks and the effluent became quite cloudy. Through several meetings with the Industrial Waste Branch and the local industry concerned, this problem has been greatly rectified. There is still a considerable fluctuation in the biochemical oxygen demand of the raw sewage and this is probably a result of the slug loadings from the local industry. An examination of the average effluent BOD and suspended solids of 6 mg/l and 9 mg/l respectively is very rewarding particularly because of the rather unusual conditions in the Town of Campbellford.

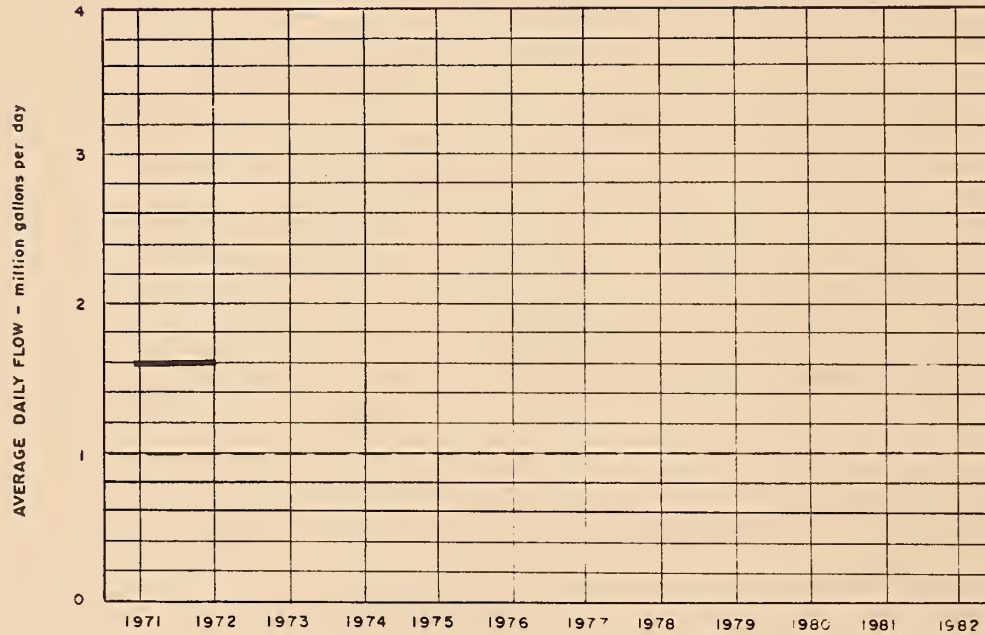
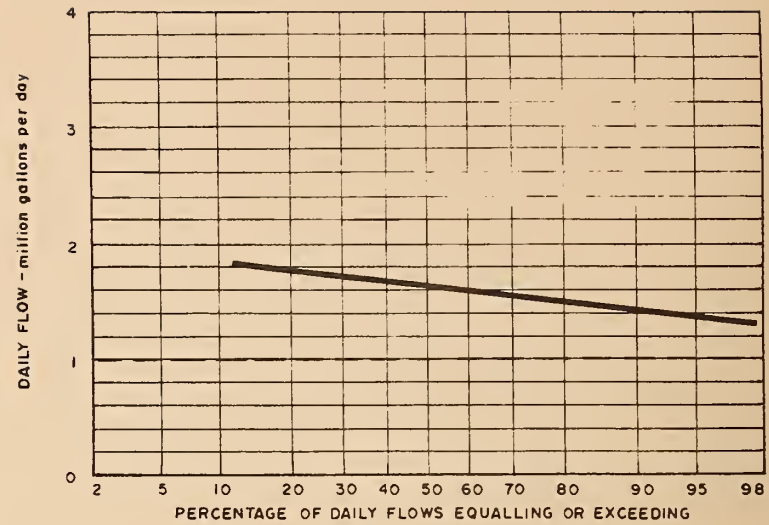
Another interesting comment that should be made at this time is the phosphate reduction in the Campbellford plant. The phosphate content in the plant effluent was consistently below the objective of 1.0 mg/l.

Since most of the tables and graphs are self explanatory, no more comment will be made in this regard.

#### CONCLUSIONS AND RECOMMENDATIONS

The flows to the treatment plant caused by infiltration into the sewage system is still a serious problem. Every effort should be taken by the municipality to reduce this infiltration which is causing a high hydraulic overload to the plant as expeditiously as possible.

## FLOWS

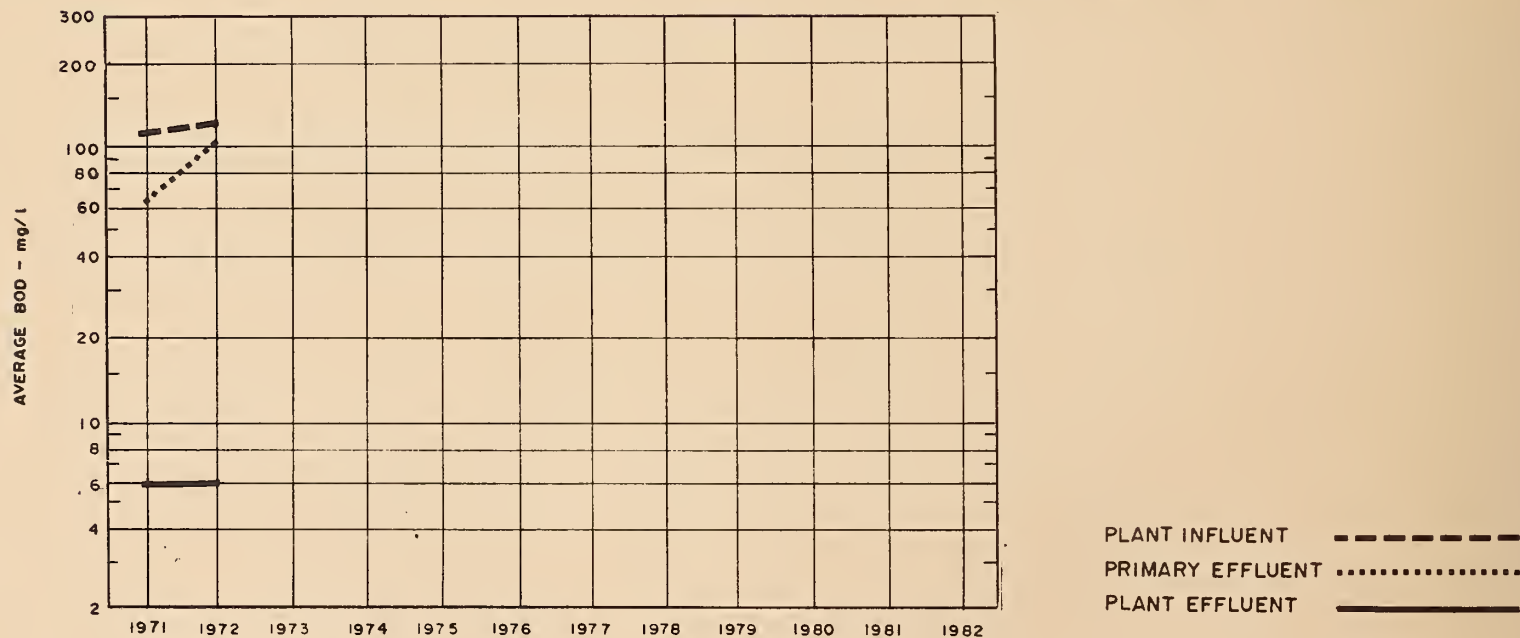
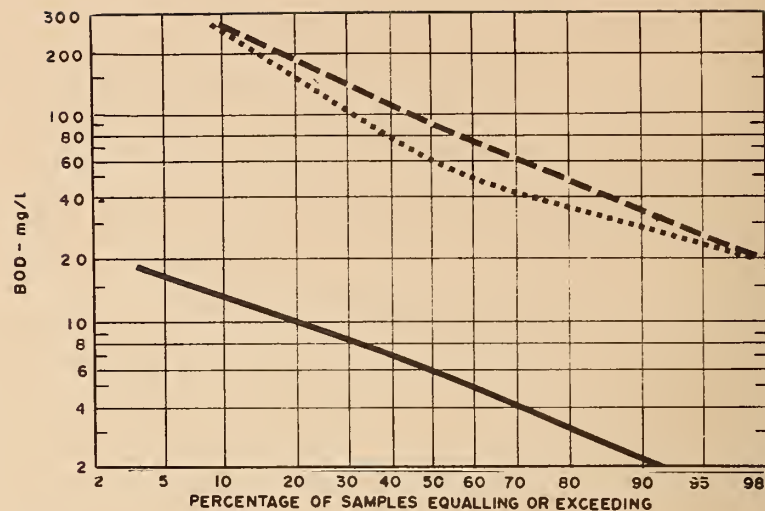


DESIGN CAPACITY - - - - -

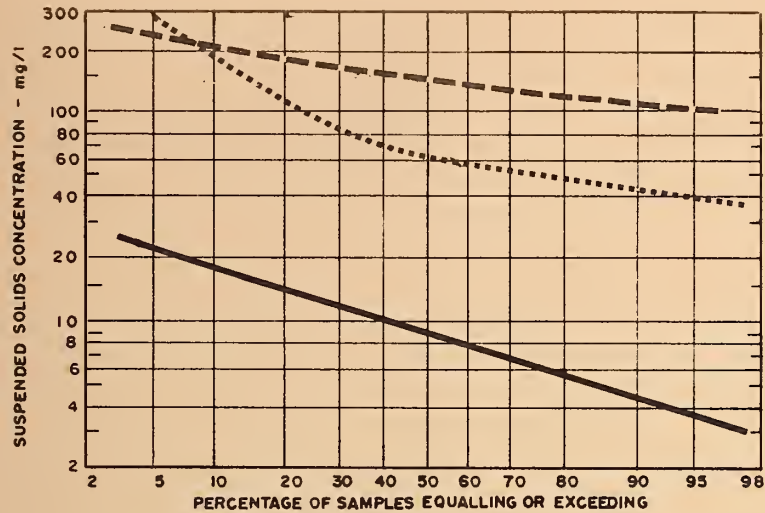
# PLANT PERFORMANCE

MONTH	FLOWS			BIOCHEMICAL OXYGEN DEMAND				SUSPENDED SOLIDS				PHOSPHORUS	
	TOTAL FLOW	AVERAGE DAY	MAXIMUM DAY	INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT	REDUCTION		INFLUENT	EFFLUENT
	million gallons	mil. gal	mgd	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l	mg/l	%	10 <sup>3</sup> pounds	mg/l P	mg/l P
JAN	45.8	1.5	1.7	140	9	94	60	145	8	94	63	6.1	.6
FEB	40.5	1.4	1.6	120	13	89	43	125	13	90	45	5.4	.9
MAR	46.1	1.5	1.9	290	5	98	131	153	8	95	67	5.4	.7
APR	48.9	1.6	1.6	123	4	97	58	175	7	96	82	3.3	.4
MAY	43.5	1.4	1.5	208	2	99	90	164	7	96	68	13.8	.3
JUNE	49.6	1.7	1.8	102	6	94	48	273	12	96	129	6.7	.8
JULY	51.2	1.7	1.7	39	4	90	18	127	7	94	61	1.4	.4
AUG	53.1	1.7	2.0	55	3	95	28	112	6	95	56	2.5	.4
SEPT	52.0	1.7	2.0	23	9	61	7	121	16	87	55	1.7	.5
OCT	53.1	1.7	2.0	160	2	99	84	138	12	91	67	3.7	.4
NOV	51.8	1.7	1.8	38	5	87	17	117	7	94	57	2.3	.6
DEC	53.4	1.7	1.8	70	4	94	35	115	10	91	56	2.6	.6
TOTAL	589.0	-	-	-	-	-	619	-	-	-	806	-	-
AVG.		1.6	MAXIMUM 2.0	119	6	95	52	148	9	94	67	5.1	.5
No. of Samples	-	-	-	23	25	-	-	73	75	-	-	23	24

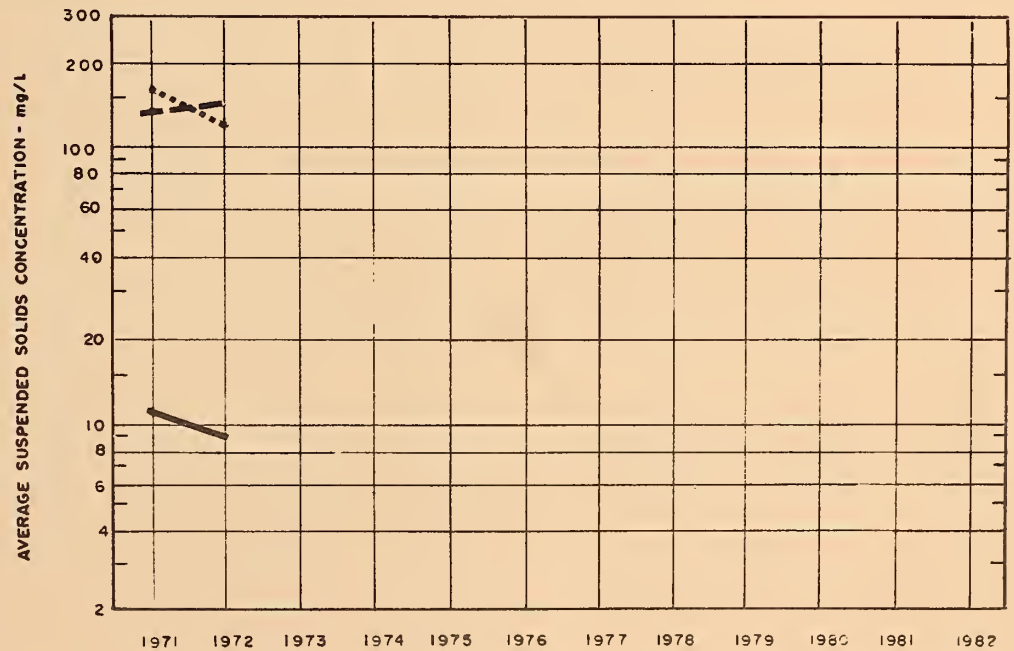
# BIOCHEMICAL OXYGEN DEMAND



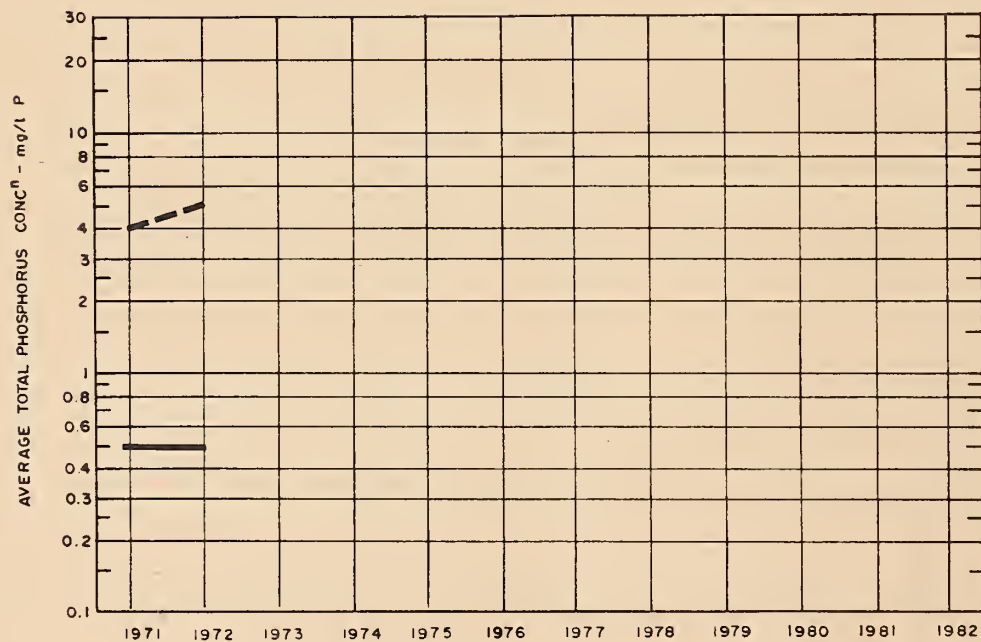
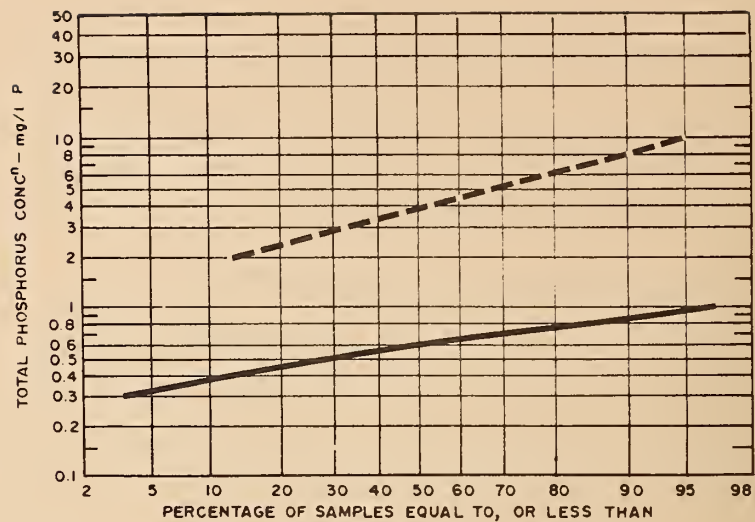
# SUSPENDED SOLIDS



PLANT INFLUENT      - - - - -  
 PRIMARY EFFLUENT      .....  
 PLANT EFFLUENT      \_\_\_\_\_



# PHOSPHORUS



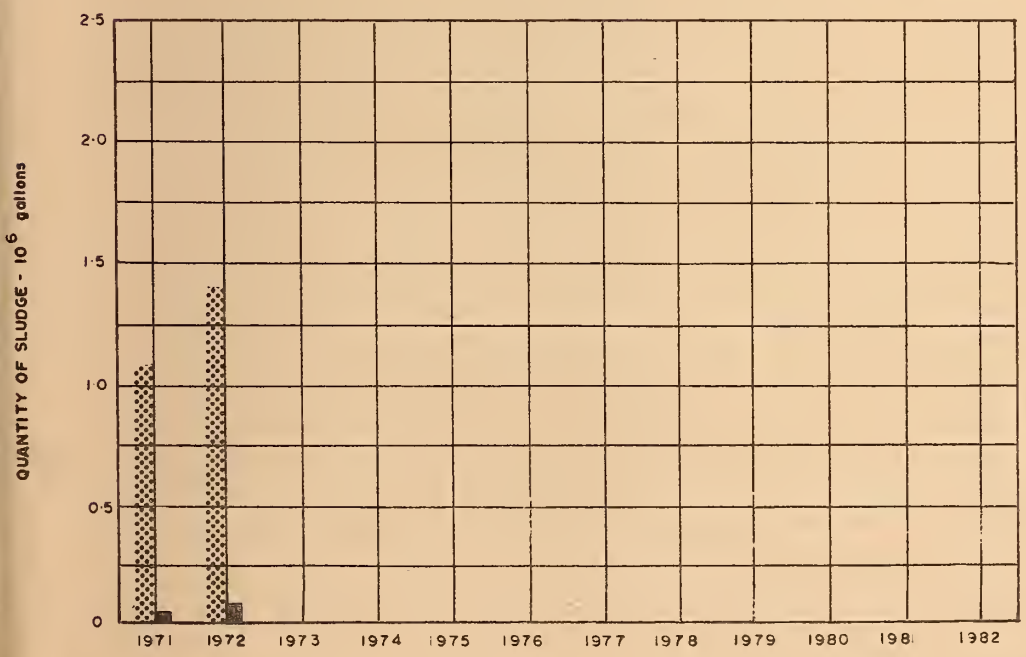
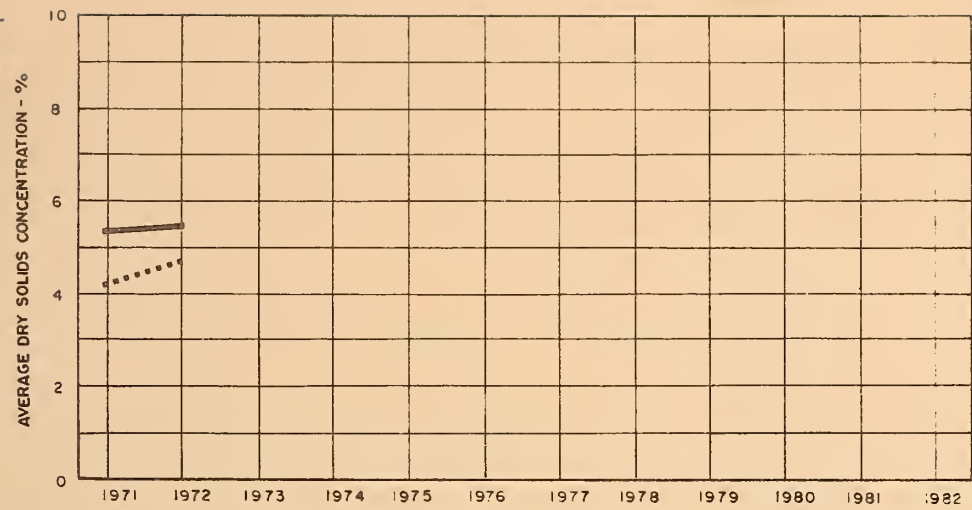
PLANT INFLUENT    - - - - -

PLANT EFFLUENT    \_\_\_\_\_



# DIGESTION

RAW SLUDGE .....  
 DIGESTED SLUDGE —————



RAW SLUDGE TO DIGESTER .....  
 DIGESTED SLUDGE REMOVED —————

# TREATMENT DATA

MONTH	GRIT	CHLORINATION		PRIMARY EFFLUENT		AERATION			SLUDGE DIGESTION and DISPOSAL							
	QUANTITY REMOVED cubic feet	CL <sub>2</sub> USED pounds	AVG. DOSE mg/l	BOD mg/l	SUSPENDED SOLIDS mg/l	MLSS CONC mg/l	F/M day <sup>-1</sup>	AIR 1000 ft <sup>3</sup> lb BOD	RAW SLUDGE			DIGESTED SLUDGE			SUPER- NATANT T. S. %	AMOUNT HAULED cubic yards
									QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %	QUANTITY 10 <sup>3</sup> gallons	TOTAL SOLIDS %	VOL. SOLIDS %		
JAN	26	581	1.3	370	327	3820	.88		114	4.5	60	25.3	4.6	47	2.0	150
FEB	20	540	1.3	230	256	3910	.50		106	4.7	65		5.1	42	1.8	
MAR	34	578	1.3	200	177	3910	.46		114	4.7	61		5.8	38	1.9	
APR	48	577	1.2	65	104	4010	.16		111	4.8	63	15.1	6.4	36	2.3	90
MAY	8	557	1.3	37	75	4150	.08		119	4.9	65	7.6	5.9	48	1.6	45
JUNE	126	574	1.2	60	69	3760	.16		116	4.9	64		5.2	42	1.8	
JULY	144	1027	2.0	50	88	3960	.13		122	4.9	67	6.1	5.8	37	1.6	36
AUG	190	1152	2.2	37	62	3800	.10		121	4.3	65	14.2	5.5	39	1.0	84
SEPT	45	1177	2.3	78	146	3850	.21		118	4.6	66		5.3	40	1.2	
OCT	70	1062	2.0	60	44	3800	.16		120	4.5	60	35.3	5.6	48	1.5	210
NOV	55	792	1.5	29	39	3500	.09		119	4.8	64	2.5	5.1	40	1.0	15
DEC	65	737	1.4	43	49	3840	.12		116	4.8	66		5.2	38	1.1	
TOTAL	831	9354	-	-	-	-	-	-	1396	-	-	106.1	-	-	-	630
AVG.	1.4 cu. ft/mil gal	780	1.6	104	121	3860	.25		116	4.7	64	8.8	5.5	41	1.6	53



Date Due

Ontario. Ministry of the  
Environment. Project Operations  
Branch.

TD227/C366/W38/1972/MOE

Campbellford water pollution  
control plant.

1972 annual operating summary.

DATE	ISSUED TO
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